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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2 Exhibit)								DATE June 2001																																															
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment																																																			
COST (<i>In Thousands</i>)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost																																													
Total Program Element (PE) Cost	0	0	495600						Continuing	Continuing																																													
5020 Space Sensors	0	0	384799						Continuing	Continuing																																													
5030 International Cooperation	0	0	75342						Continuing	Continuing																																													
5050 Systems Engineering and Integration	0	0	10000						Continuing	Continuing																																													
5060 Test And Evaluation	0	0	15000						Continuing	Continuing																																													
5090 Program Operations	0	0	10459						Continuing	Continuing																																													
A. Mission Description and Budget Item Justification The Sensor Program Element (PE) is responsible for the research and development of technologies and capabilities that enhance ballistic missile detection, midcourse tracking and discrimination. This PE includes five projects: Space Sensors, International Cooperation efforts, sensor specific System Engineering and Integration (SE&I), Test and Evaluation, and Program Operations. The Space Sensor project supports the Block 2010 Space-based Infrared System (SBIRS) Low component including Program Definition and Engineering Development. The International Cooperation project supports the Russian-American Observation Satellite (RAMOS) program, which engages U.S. and Russian developers in early warning satellite technology, providing a forum for information exchange through the joint definition and execution of space experiments. Sensors SE&I project supports Increment 3/Ballistic Missile Defense Project integration. Activities include concept definition, risk reduction, data collection and phenomenology and experiments. The Test and Evaluation project includes developing an advanced radar technology testbed and prove out leap-ahead technologies. The Program Operations project supports the management of the Sensor Segment.																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">B. Program Change Summary</th> <th style="text-align: center;"><u>FY 2000</u></th> <th style="text-align: center;"><u>FY 2001</u></th> <th style="text-align: center;"><u>FY 2002</u></th> <th style="text-align: center;"><u>FY 2003</u></th> </tr> </thead> <tbody> <tr> <td>Previous President's Budget (<u>FY 2001</u> PB)</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Adjustments to Appropriated Value</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>a. Congressional General Reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>b. SBIR / STTR</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>c. Omnibus or Other Above Threshold Reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>d. Below Threshold Reprogramming</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>e. Rescissions</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>											B. Program Change Summary	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	Previous President's Budget (<u>FY 2001</u> PB)					Appropriated Value					Adjustments to Appropriated Value					a. Congressional General Reductions					b. SBIR / STTR					c. Omnibus or Other Above Threshold Reductions					d. Below Threshold Reprogramming					e. Rescissions				
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BUDGET ACTIVITY 4 - Program Definition and Risk Reduction			PE NUMBER AND TITLE 0603884C Sensors Segment		
Adjustments to Budget Years Since <u>FY 2001</u> PB					
Current Budget Submit (<u>FY 2002</u> PB)			495600		
Change Summary Explanation:					
<i>Page 2 of 22 Pages</i>			Exhibit R-2 (PE 0603884C)		

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment				PROJECT 5020		
COST <i>(In Thousands)</i>	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
5020 Space Sensors	0	0	384799						Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification</u></p> <p>This Project funds the Block 2010 SBIRS Low (Low Earth Orbit component of SBIRS) Program Definition activities, which prepare for Engineering Development. SBIRS Low is the Low Earth Orbit (LEO) component of SBIRS. It also funds SBIRS/BMD integrated activities. SBIRS will incorporate new technologies to enhance detection; improve reporting of ICBM, SLBM and tactical ballistic missiles; and provide critical mid-course tracking and discrimination data for Ballistic Missile Defense. SBIRS will consist of satellites in Geosynchronous Orbits (GEO), Highly Elliptical Orbits (HEO) and LEO; and an integrated centralized ground station serving all SBIRS space projects and Defense Support Program (DSP) satellites.</p> <p>Block 2010 SBIRS Low primary mission is missile defense. It provides initial warning of a ballistic missile attack on the US, its deployed forces or its allies. SBIRS Low and SBIRS High are the two components, which provides missile warning, missile defense, battlespace characterization and technical intelligence for the United States, its Allies and theater contingents. SBIRS Low satellites provide which continuous tracking from launch to impact or intercept. Functions include booster detection, post boost vehicle tracking, midcourse object tracking, resolved object discrimination and intercept hit/kill assessment. This project will pass data to boost, midcourse and terminal defense projects. The data will be used to cue radars over-the-horizon and provide interceptor handovers.</p> <p>FY 2000 Accomplishments:</p> <ul style="list-style-type: none"> • 0 Project was funded under Program Element 0604442F (SBIRS). Previous projects included: 4598 SBIRS Low Element and 4000 Operational Support. <p>Total 0</p> <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> • 0 Project was funded under Program Element 0604442F (SBIRS). Previous projects included: 4598 SBIRS Low Element and 4000 Operational Support. <p>Total 0</p> <p>FY 2002 Planned Program:</p>										
<div style="display: flex; justify-content: space-between;"> Project 5020 Page 3 of 22 Pages Exhibit R-2A (PE 0603884C) </div>										

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<ul style="list-style-type: none"> • 289955 Block 2010 SBIRS Low contract to support full constellation with deployment by FY 11. Actions include: enhancing software development, procuring and testing engineering model sensor package, and procuring limited LL parts based upon the Preliminary Design Review design. Begin Engineering Development preparation and mitigate program risk through risk reduction demonstrations such as making an engineering model sensor package available before CDR. Provide risk mitigation enhancement to provide full confidence in meeting full constellation by FY 11. Finalize program planning in preparation for CDR. The funds also support Increment 3 Integration into the SBIRS Systems of Systems. These activities support Rolling Evaluation, which culminates in Source Selection in FY 03. • 47097 Provided Program Definition Support (Includes studies, integration into SBIRS Increment 3 System of Systems and modeling and simulation) • 20719 Accomplished other risk reduction activities (Includes cryocoolers, batteries, algorithms, radiation hardened parts, phenomenology, optical filters, MSX data reduction, contamination control, focal plane arrays (visible and long-wave), and survivability. • 27028 Supported Program Office activities 	<div style="display: flex; justify-content: space-between;"> Total 384799 </div>																																																																																																																																	
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PE 0603875C, International Cooperative Program	83984	129699																																																																																																																																
<p>C. Acquisition Strategy:</p> <p>The SBIRS program is managed through a single consolidated System Program Office (SPO) at the Space and Missile Systems Center, Los Angeles Air Force Base, CA. SBIRS Low began Program Definition activities in August 1999 with the award of two firm fixed price contracts. Program Review was continued past CDR to support the Project 5020</p>																																																																																																																																		

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<p>risk reduction activities that mitigate risk for a full constellation in support of BMD by FY11. Additional risk reduction activities include for a more robust software development effort and an engineering model sensor package for testing between PDR and CDR. This continued period of performance (PDR to CDR) is a CPAF contract.</p> <p>Program Definition will be followed by a competitive CPAF contract award for Engineering Development, scheduled for award in the third quarter of FY03, with the deployment of the SBIRS Low satellites beginning in the fourth quarter of FY06 and a full constellation and ground capability in FY11.</p>											
				<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
D. Schedule Profile											
Preliminary Design Review						2Q					
Project 5020				Page 5 of 22 Pages				Exhibit R-2A (PE 0603884C)			

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BMDO RDT&E COST ANALYSIS (R-3)										DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction					PE NUMBER AND TITLE 0603884C Sensors Segment					PROJECT 5020		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Definition	FFP	TRW				96676	Aug 99			Cont		
b. Program Definition	FFP	Spectrum Astro				96676	Aug 99			Cont		
c. Program Definition Extension	TBD	TRW				48301	TBD			Cont.		
d. Program Definition Extension	TBD	Spectrum Astro				48301	TBD			Cont.		
e. Program Definition Support	Various					47098				Cont.		
f. Other Risk Reduction	Various					20719				Cont.		
g. Engineering Development										Cont.		
Subtotal Product Development:						357771				Cont		
Remark:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Program Support (OGC)	Various					27028				Cont.	51583	
b.												
Subtotal Support Costs:						27028				Cont	51583	
Remark:												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Test and Evaluation:												
Remark:												
<div style="display: flex; justify-content: space-between;"> Project 5020 Page 6 of 22 Pages Exhibit R-3 (PE 0603884C) </div>												

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BMDO RDT&E COST ANALYSIS (R-3)										DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction					PE NUMBER AND TITLE 0603884C Sensors Segment					PROJECT 5020		
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Management Services:												
Remark:												
Project Total Cost:						384799				Cont		
Remark:												
Project 5020				Page 7 of 22 Pages				Exhibit R-3 (PE 0603884C)				

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment				PROJECT 5030		
COST <i>(In Thousands)</i>	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
5030 International Cooperation	0	0	75342						Continuing	Continuing

A. Mission Description and Budget Item Justification

The Russian-American Observation Satellite (RAMOS) project is an innovative U.S. – Russian space-based remote sensor research and development program addressing ballistic missile defense and national security. This program engages Russian developers of early warning satellite in the joint definition and execution of aircraft and space experiments. The RAMOS program will design, build, launch, and operate two satellites that will provide stereoscopic observations of the earth's atmosphere and ballistic missile launches in the short wavelength and mid-to-long wavelength infrared bands. Preliminary experiments designed to support program definition occurred between 1995 and 1999 using existing U.S. and Russian space and aircraft platforms to collect imagery. The U.S. Midcourse Space Experiment (MSX) and the Miniature Sensor Technology Integration (MSTI-3) satellites were used to collect nearly simultaneous stereo imagery with the Russian RESURS 01 satellite. Joint experiments using U.S. and Russian prototype sensors were flown aboard the U.S. Flying Infrared Signatures Technology Aircraft (FISTA), demonstrating our ability to jointly plan, execute, and analyze RAMOS type experiments.

The RAMOS team began Program Design in the Fall of 2000. The RAMOS project consists of two co-orbital satellites each with a sensor suite consisting of an infrared imaging radiometer, a visible wide-angle photometer, and a visible camera. Additionally one satellite will carry a short waveband infrared polarimeter and the other an ultraviolet photometer. Current plans call for Russia to provide the launch capability, satellite platforms, and the ground processing and control equipment while the U.S. will provide the infrared sensors. The satellites are scheduled for launch in FY04 with a nominal two-year on-orbit life expectancy.

FY 2000 Accomplishments:

- 0 Project was funded under Program Element: 0603875C (International Cooperative Programs). Previous projects included: 1161 Advanced Sensor Technology and 4000 Operational Support.

Total 0

FY 2001 Planned Program:

- 0 Project was funded under Program Element 0603875C (International Cooperative Programs). Previous projects included: 1161 Advanced Sensor Technology and 4000 Operational Support.

Total 0

FY 2002 Planned Program:

Project 5030

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•	34000	Complete detailed designs of the satellite platforms, ground project, launch vehicle, and all associated projects and instruments to accomplish the space experiment, including build-to-specification, detailed drawings and updated risk mitigation plans. Finalize test plans for system and component testing and perform quality assurance activities during fabrication of the projects. Finalize concept of operations and experiments planning.																																																																																																																																
•	30115	Complete detailed designs of the satellite primary sensors and all associated projects and instruments to accomplish the space experiments. Finalize test plans for testing and continue to perform quality assurance activities during fabrication of the sensor project. Design and fabricate sensor prototypes to be used during interface and project tests. Finalize concept of operations and experiments planning. Begin fabrication of long lead items. Begin writing software for sensor. Begin development of models and simulations to test the design and concepts to include computer mass and mathematical models, orbit models of experiment simulations, and simulations to validate hardware and design trades. Prepare concept for management, processing, storage, and analysis of experiment data.																																																																																																																																
•	11227	Perform system engineering and configuration control processes for RAMOS project. Monitor and facilitate progress of critical design. Monitor and evaluate subproject and component testing. Provide technical review of exported data. Provided in country administrative, security, and technical support of RAMOS program office.																																																																																																																																
Total		75342																																																																																																																																
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">B. <u>Other Program Funding Summary</u></th> <th style="width: 5%;"><u>FY 2000</u></th> <th style="width: 5%;"><u>FY 2001</u></th> <th style="width: 5%;"><u>FY 2002</u></th> <th style="width: 5%;"><u>FY 2003</u></th> <th style="width: 5%;"><u>FY 2004</u></th> <th style="width: 5%;"><u>FY 2005</u></th> <th style="width: 5%;"><u>FY 2006</u></th> <th style="width: 5%;"><u>FY 2007</u></th> <th style="width: 5%;"><u>To</u> <u>Compl</u></th> <th style="width: 5%;"><u>Total</u> <u>Cost</u></th> </tr> </thead> <tbody> <tr> <td>PE 0603880C, BMD System</td> <td></td> <td></td> <td>779584</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603881C, Terminal Defense Segment</td> <td></td> <td></td> <td>988180</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603882C, Midcourse Defense Segment</td> <td></td> <td></td> <td>3940534</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603883C, Boost Defense Segment</td> <td></td> <td></td> <td>685363</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603884C, Sensors Segment; Project 5020, Space Sensors</td> <td></td> <td></td> <td>384799</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603884C, Sensors Segment; Project 5050, Systems Engineering & Integration</td> <td></td> <td></td> <td>10000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603884C, Sensors Segment; Project 5060, Test & Evaluation</td> <td></td> <td></td> <td>15000</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603884C, Sensors Segment; Project 5090, Program Operations</td> <td></td> <td></td> <td>10459</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603175C, Technology</td> <td></td> <td></td> <td>112890</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Cont.</td> <td>Cont.</td> </tr> <tr> <td>PE 0603875C, International Cooperative Program</td> <td>83984</td> <td>129699</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>										B. <u>Other Program Funding Summary</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To</u> <u>Compl</u>	<u>Total</u> <u>Cost</u>	PE 0603880C, BMD System			779584						Cont.	Cont.	PE 0603881C, Terminal Defense Segment			988180						Cont.	Cont.	PE 0603882C, Midcourse Defense Segment			3940534						Cont.	Cont.	PE 0603883C, Boost Defense Segment			685363						Cont.	Cont.	PE 0603884C, Sensors Segment; Project 5020, Space Sensors			384799						Cont.	Cont.	PE 0603884C, Sensors Segment; Project 5050, Systems Engineering & Integration			10000						Cont.	Cont.	PE 0603884C, Sensors Segment; Project 5060, Test & Evaluation			15000						Cont.	Cont.	PE 0603884C, Sensors Segment; Project 5090, Program Operations			10459						Cont.	Cont.	PE 0603175C, Technology			112890						Cont.	Cont.	PE 0603875C, International Cooperative Program	83984	129699								
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C. <u>Acquisition Strategy:</u> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> Project 5030 Page 9 of 22 Pages Exhibit R-2A (PE 0603884C) </div>																																																																																																																																		

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)

DATE

June 2001

BUDGET ACTIVITY

4 - Program Definition and Risk Reduction

PE NUMBER AND TITLE

0603884C Sensors Segment

RAMOS is a cooperative experiment program designed to engage the Russians in early warning and theater missile defense related technologies. The tasks to complete the design, fabrication, launch, and operations of the two-satellite constellation will be completed under three major contracts.

The first contract is with Utah State University (USU)/Space Dynamics Laboratory (SDL), a designated University Affiliated Research Center for space sensors. SDL is the current U.S. prime contractor for RAMOS and has a prime/subcontractor relationship with the Russian State Company, Rosvoorouzhenie (now Rosoboronexport), for Russian tasks. This contractual approach will be used for design and development of the RAMOS project through the Preliminary Design Review (PDR) scheduled for 2Q FY02. After PDR, USU will remain as the prime U.S. contractor for the sensor development and fabrication as well as mission planning and data reduction.

The second contract will be a direct contract with the Russian State Company, Rosoboronexport (formerly Rosvoorouzhenie). During FY01, BMDO plans to negotiate a government-to-government agreement with the Russian Federation to govern the RAMOS program. Once this agreement is concluded, BMDO will contract directly with Rosoboronexport for the Russian efforts. Under this contract, Rosoboronexport, through Russian subcontractors, will be responsible for the development and fabrication of the satellite platforms, development and operation of the ground project, and launch services for the two RAMOS satellites.

The third contract is with Ball Aerospace and Technologies Corporation (BATC) of Boulder, CO. As the Systems Engineering and Integration contractor for BMDO, BATC will be primarily responsible for monitoring the Russian effort and facilitating the integration of U.S. and Russian components. BATC will also support preparation of program documentation for technology protection and security and provide in country administrative, security and technical support of RAMOS Program Office.

D. Schedule Profile	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>
Preliminary Design Review for U.S. Sensors			1Q					
RAMOS Project Preliminary Design Review			2Q					
Complete Critical Design for U.S. Sensors			4Q					

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BMDO RDT&E COST ANALYSIS (R-3)										DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction					PE NUMBER AND TITLE 0603884C Sensors Segment					PROJECT 5030		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Hardware Development	CPAF	USU/SDL, Logan, UT				29942					29942	
b. Hardware Development	OTAF	Rosoboronexport, RF				34000					34000	
c. Hardware Development	CPAF	BATC, Boulder, CO				10000					10000	
d.												
Subtotal Product Development:						73942					73942	
Remark: Prior to FY99, the RAMOS program was in the BA3 – Advanced Technology Development, PE 0603173C, Support Technologies --ATD												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Development Support	Allot	AFRL, Hanscom AFB				600				TBD	600	
b.												
Subtotal Support Costs:						600					600	
Remark: Prior to FY99, the RAMOS program was in BA3 – Advanced Technology Development, PE 0603173C, Support Technologies --ATD												
AFRL technical support will be required in program development, experiment planning and data analysis, with emphasis on earth backgrounds, data certification technology transfer and surveillance												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Test and Evaluation:												
Remark:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Security Monitoring Spt	Allot	DTRA				200					200	
b. Program Mgt Spt	CPFF	CSC/NRC, Arlington,				600					600	
Project 5030												
Page 11 of 22 Pages												
Exhibit R-3 (PE 0603884C)												

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BMDO RDT&E COST ANALYSIS (R-3)											DATE June 2001	
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction						PE NUMBER AND TITLE 0603884C Sensors Segment						
b. Program Mgt Spt	CPFF	CSC/NRC, Arlington, VA and Aerospace, EL segundao, CA				600					600	
c.												
Subtotal Management Services:						800					800	
Remark: Prior to FY99, the RAMOS program was in BA3 – Advanced Technology Development, PE 0603173C, Support Technologies --ATD												
Project Total Cost:						75342					75342	
Remark: Prior to FY99, the RAMOS program was in BA3 – Advanced Technology Development, PE 0603173C, Support Technologies --ATD												

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment				PROJECT 5050		
COST <i>(In Thousands)</i>	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
5050 Systems Engineering and Integration	0	0	10000						Continuing	Continuing

A. Mission Description and Budget Item Justification

System Engineering and Integration will support the integration of SBIRS Increment 3 into the BMD System. This effort includes the definition and risk reduction of SBIRS Increment 3/BMD System interfaces.

Concept Definition
This project performs the necessary engineering, trade studies, and system requirements definition for the sensor project of the BMD system.

Risk Reduction
Provide Simulation and Hardware in the loop demonstrations of SBIRS Low and BMD functionality. Provide exercise support to elicit operator-in-the loop feedback.

Data Collection and Phenomenology
Analyze past IR and Visible Sensor Data collections from previous experiments and test to support algorithm development.

Experiments
Plan and develop pre-on-orbit tests (Integrated Flight Tests, TCMP Flights, Red Crow Experiments, etc...) that provide data for SBIRS Low Risk Reduction Effort.

SBIRS Integration
Perform BMD and SBIRS integration activities.

FY 2000 Accomplishments:

- 0

Total 0

Project 5050
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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment				PROJECT 5050		
FY 2001 Planned Program: <ul style="list-style-type: none"> • 0 Total 0										
FY 2002 Planned Program: <ul style="list-style-type: none"> • 10000 Perform systems engineering for SBIRS integration into the Ballistic Missile Defense Architecture. Address interoperability issues and interface features (data flow rate, volume, format, and data content), data fusion/sensor synergy and architecture analysis). Total 10000										
B. <u>Other Program Funding Summary</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	To <u>Compl</u>	Total <u>Cost</u>
PE 0603880C, BMD System			779584						Cont.	Cont.
PE 0603881C, Terminal Defense Segment			988180						Cont.	Cont.
PE 0603882C, Midcourse Defense Segment			3940534						Cont.	Cont.
PE 0603883C, Boost Defense Segment			685363						Cont.	Cont.
PE 0603884C, Sensors Segment; Project 5020, Space Sensors			384799						Cont.	Cont.
PE 0603884C, Sensors Segment; Project 5030, International Cooperation			75342						Cont.	Cont.
PE 0603884C, Sensors Segment; Project 5060, Test & Evaluation			15000						Cont.	Cont.
PE 0603884C, Sensors Segment; Project 5090, Program Operations			10459						Cont.	Cont.
PE 0603175C, Technology			112890						Cont.	Cont.
PE 0603875C, International Cooperative Program	83984	129699								
C. <u>Acquisition Strategy:</u>										
D. <u>Schedule Profile</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>		
<div style="display: flex; justify-content: space-between;"> Project 5050 Page 14 of 22 Pages Exhibit R-2A (PE 0603884C) </div>										

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BMDO RDT&E COST ANALYSIS (R-3)										DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction					PE NUMBER AND TITLE 0603884C Sensors Segment					PROJECT 5050		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Product Development:												
Remark:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Systems Engineering & Integration	Various					10000					10000	
b.												
Subtotal Support Costs:						10000					10000	
Remark:												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Test and Evaluation:												
Remark:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Management Services:												
Remark:												
Project Total Cost:						10000					10000	
Remark:												
Project 5050												

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment				PROJECT 5060		
COST (In Thousands)	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
5060 Test And Evaluation	0	0	15000						Continuing	Continuing
<p>A. <u>Mission Description and Budget Item Justification</u></p> <p>The Advanced Radar technology testbed will capitalize on recent advances in radar and computational technologies to enable leap-ahead advances in radar capabilities. These capabilities are required to make projects more affordable while providing capabilities against counter-measures and advanced threats. This project will employ an open system architecture to permit infusion of new components from throughout the radar technology community.</p> <p>FY 2000 Accomplishments:</p> <ul style="list-style-type: none"> Total 0 <p>FY 2001 Planned Program:</p> <ul style="list-style-type: none"> Total 0 <p>FY 2002 Planned Program:</p> <ul style="list-style-type: none"> 15000 FY02 new start. Initiate concept studies with major radar contractors. Develop systems engineering methodology to identify and refine system requirements to ensure open systems concept to enable infusing innovative concepts. Total 15000 										
B. <u>Other Program Funding Summary</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>To Compl</u>	<u>Total Cost</u>
PE 0603880C, BMD System			779584						Cont.	Cont.
PE 0603881C, Terminal Defense Segment			988180						Cont.	Cont.
PE 0603882C, Midcourse Defense Segment			3940534						Cont.	Cont.
PE 0603883C, Boost Defense Segment			685363						Cont.	Cont.
PE 0603884C, Sensors Segment; Project 5020, Space Sensors			384799						Cont.	Cont.
<div style="display: flex; justify-content: space-between;"> Project 5060 Page 16 of 22 Pages Exhibit R-2A (PE 0603884C) </div>										

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)										DATE June 2001	
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment						PROJECT 5060	
PE 0603884C, Sensors Segment; Project 5030, International Cooperation			75342						Cont.	Cont.	
PE 0603884C, Sensors Segment; Project 5050, Systems Engineering & Integration			10000						Cont.	Cont.	
PE 0603884C, Sensors Segment; Project 5060, Test & Evaluation			15000						Cont.	Cont.	
PE 0603175C, Technology			112890						Cont.	Cont.	
PE 0603875C, International Cooperative Program	83984	129699									
<p>C. <u>Acquisition Strategy:</u> The program will be managed by BMDO with support from the U.S. Army Space and Missile Defense Command and the Navy PEO for Theater, Air and Missile Defense. Concept studies will be initiated in FY02 with major radar project contractors and separate supporting concept studies for innovative components from radar component technology contractors. Concurrently a system engineering methodology will define the system requirements based on capabilities that can be achieved. A down-select to the best one or two concepts will be made in FY03 with continued refinement of the concepts and risk reduction activities. In FY04 a single concept will be defined.</p>											
D. <u>Schedule Profile</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>			
Contract Award			3Q								
Project 5060			Page 17 of 22 Pages				Exhibit R-2A (PE 0603884C)				

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BMDO RDT&E COST ANALYSIS (R-3)										DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction					PE NUMBER AND TITLE 0603884C Sensors Segment					PROJECT 5060		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Product Development:												
Remark:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Support Costs:												
Remark:												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a. Major System Contractors	CP	TBD				10000					10000	
b. Component Contracts	CP	TBD				5000					5000	
c.												
Subtotal Test and Evaluation:						15000					15000	
Remark:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Management Services:												
Remark:												
Project Total Cost:						15000					15000	
Remark:												
Project 5060												

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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)								DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment				PROJECT 5090		
COST <i>(In Thousands)</i>	FY 2000 Actual	FY 2001 Estimate	FY 2002 Estimate	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	Cost to Complete	Total Cost
5090 Program Operations	0	0	10459						Continuing	Continuing

A. Mission Description and Budget Item Justification

This project covers personnel and related facility support costs, statutory and fiscal requirements, support service contracts and the BMDO Data Centers Programs.

Personnel covers government civilians performing program-wide oversight functions such as financial management, contracting, security, information systems support, and legal services at the Ballistic Missile Defense Organization located within the Washington D.C. area, as well as BMDO's Executing Agents within the US Army Space & Missile Defense Command, US Army PEO Air and Missile Defense, US Navy PEO for Theater Surface Combatants, US Air Force and the Joint National Test Facility. Related facility costs include rents, utilities, supplies, ADP equipment, and all the associated operation and maintenance activities.

Fiscal Requirements include reimbursable services such as accounting services provided by the Defense Finance and Accounting Services (DFAS); reserves for special termination costs on designated contracts; and provisions for terminating other programs as required. BMDO has additional requirements to provide for foreign currency fluctuations on its limited number of foreign contracts. Statutory requirements include funding for charges to canceled appropriations in accordance with Public Law 101-510.

Assistance required to support BMD program-wide management functions is also contained in this project. This assistance ranges from operational contracts to support functions such as ADP operations, Access control offices and graphics support, to efforts required to supplement BMDO and Executing Agent government personnel. Typical efforts include cost estimating, security management, information management, technology integration across BMDO projects and assessment of schedule, cost and performance, with attendant documentation of the many related programmatic issues. The requirements for this area are based on most economical and efficient utilization of contractors versus government personnel.

This project also includes the BMDO Data Centers Programs. The BMDO Data Centers Information System Program Manager provides management, oversight, technical assistance, and expertise for the BMDO Data Centers Program. The BMDO Data Centers Program archives, manages, and develops data products, distributes and provides remote access to all relevant BMD data. Operation and management of Data Center activities is accomplished at several sites, each site specializing in a particular discipline. Taskings include providing assessments for technical/programmatic issues and data center performance, coordinating segment customer program/data management requirements, and cooperative partnership requirements.

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BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment				PROJECT 5090																																																																																																																										
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FY 2002 Planned Program: <ul style="list-style-type: none"> • 12829 Provides management and support for overhead/indirect fixed costs such as civilian payroll, travel, rents & utilities, supplies and the data centers programs. <div style="display: flex; justify-content: space-between; width: 80%;"> Total 12829 </div>																																																																																																																																		
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BMDO RDT&E BUDGET ITEM JUSTIFICATION (R-2A Exhibit)							DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction				PE NUMBER AND TITLE 0603884C Sensors Segment					
C. <u>Acquisition Strategy:</u>									
D. <u>Schedule Profile</u>		<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>

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Exhibit R-2A (PE 0603884C)

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BMDO RDT&E COST ANALYSIS (R-3)										DATE June 2001		
BUDGET ACTIVITY 4 - Program Definition and Risk Reduction					PE NUMBER AND TITLE 0603884C Sensors Segment					PROJECT 5090		
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Product Development:												
Remark:												
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Support Costs:												
Remark:												
III. Test and Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Test and Evaluation:												
Remark:												
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	<u>FY 2001</u> Cost	<u>FY 2001</u> Award Date	<u>FY 2002</u> Cost	<u>FY 2002</u> Award Date	<u>FY 2003</u> Cost	<u>FY 2003</u> Award Date	Cost To Complete	Total Cost	Target Value of Contract
a.												
Subtotal Management Services:												
Remark:												
Project Total Cost:												
Remark:												
Project 5090												